

Claims

1. Automated multiple-gear transmission with an input shaft, a gearwheel assembly to engage the gears via several output paths, an output shaft, and an auxiliary three-shaft planetary assembly, characterized in that the gearwheel assembly comprises at least four intermediate independent spur gear stages, which are formed as spur gear transmission ratios (i) and which can be connected to two of the three shafts of the planetary assembly (PS) directly or via shift control elements (S), such that three shift control elements are engaged for each engaged gear.

2. Multiple-gear transmission according to any of the preceding claims, characterized in that the third shaft of the planetary assembly (PS) is connected to the output shaft.

3. Multiple-gear transmission according to any of the preceding claims, characterized in that two spur gear transmission ratios (i1, i4) are connected via two shift control elements (SR1, SR) to a first shaft of the planetary assembly (PS), a further spur gear transmission ratio (i2) is connected via a shift control element (S2) to a second shaft of the planetary assembly (PS) and another spur gear transmission ratio (i3) is connected on the primary side via a shift control element both to the drive shaft and to the housing (SB) and on the secondary side both to the first shaft of the planetary assembly (PS) via a shift control element (S5) and to the second shaft of the planetary assembly (PS) via a shift control element (S4).

4. Multiple-gear transmission according to any of the preceding claims, characterizing in that the planetary assembly is a plus planetary assembly, whose drive takes place at the annular gearwheel, such that the spur gear transmission ratios (i1, i4) are in active engagement with the solar gearwheel or with the web, while the spur gear transmission ratio (i2) is in active engagement with the web or the solar gearwheel.

5. Multiple-gear transmission according to any of the preceding claims, characterized in that the planetary assembly is a minus planetary assembly, whose drive takes place at the web, such that the spur gear transmission ratios (i1, i2) are

in active engagement with the solar gearwheel or with the annular gearwheel, while the spur gear transmission ratio (12) is in active engagement with the annular gearwheel or with the solar gearwheel.

6. Multiple-gear transmission according to any of the preceding claims, characterized in that the shift control elements are made as form-locking shift control elements designed as synchromeshes, or as claw couplings.

7. Multiple-gear transmission according to any of the preceding claims, characterized in that the shift control elements are made as frictional change-under-load elements.

8. Multiple-gear transmission according to any of the preceding claims, characterized in that the shift control elements are arranged before the associated spur gear transmission ratios.

9. Multiple-gear transmission according to any of the preceding claims, characterized in that the shift control elements are arranged after the associated spur gear transmission ratios.

10. Multiple-gear transmission according to any of the preceding claims, characterized in that the transmission comprises a countershaft.

11. Multiple-gear transmission according to any of the preceding claims, characterized in that the transmission comprises two countershafts of the same type.